Business Trends and Outlook Survey Index Methodology

Indexes may be used to create numeric representations of questions that have non-numeric answers. For many of the Business Trends and Outlook Survey (BTOS) questions, what are commonly referred to as diffusion indexes are calculated along with their associated standard errors.

To calculate each index, each question response is first assigned a weight prior to the construction of the index. The table below shows the questions for which an index is produced as well as the weight used for each response in the calculation of the index.

For most questions, only three answers are possible: "Increased", "No change", and "Decreased". In those cases, the following formula is used to create the index value using the weighted survey estimates:

$$\hat{I}_i = 100 * (1 * \hat{P}_{I,i} + 0.5 * \hat{P}_{NC,i} + 0 * \hat{P}_{D,i}),$$

where $\hat{P}_{I,i}$ is the proportion estimate for response choice "Increased" for question *i*, $\hat{P}_{NC,i}$ is the proportion estimate for response choice "No change" for question *i*, and $\hat{P}_{D,i}$ is the proportion estimate for response choice "Decreased" for question *i*. The proportion estimate is the percentage estimate converted to a 0 to 1 scale.

For questions where there are five possible responses that include "Excellent", "Above average", "Average", "Below average", and "Poor", the index is calculated as:

$$\hat{I}_i = 100 * (1 * \hat{P}_{E,i} + 0.75 * \hat{P}_{AA,i} + 0.5 * \hat{P}_{A,i} + 0.25 * \hat{P}_{BA,i} + 0 * \hat{P}_{P,i})$$

where $\hat{P}_{E,i}$ is the proportion estimate for response choice "Excellent" for question *i*, $\hat{P}_{AA,i}$ is the proportion estimate for response choice "Above average" for question *i*, $\hat{P}_{A,i}$ is the proportion estimate for response choice "Average" for Question *i*, $\hat{P}_{BA,i}$ is the proportion estimate for response choice "Below average" for question *i*, and $\hat{P}_{P,i}$ is the proportion estimate for response choice "Poor" for question *i*.

The forecast horizon index is calculated in a similar fashion with the proportion estimate for response choice "1 month or less" receiving a weight of 1, "2-3 months" receiving a weight of 0.75, "4-6 months" receiving a weight of 0.50, "7-12 months" receiving a weight of 0.25, and "More than 12 months" receiving a weight of zero.

The standard errors for the BTOS index estimates are calculated using a delete-a-group jackknife procedure, using 10 groups. It is important to note that the standard error only measures sampling variability and does not measure any systematic biases in the estimates. Refer to BTOS Methodology for more information on sampling variability. The Census Bureau recommends that individuals using these

estimates incorporate sampling error information into their analyses, as this could affect the conclusions drawn from the estimates.

Business Trends and Outlook Survey Index Weighting

Question	Short Name	Weight				
		1	0.75	0.5	0.25	0
Overall, how would you describe this business's current performance?	Current performance	Excellent	Above average	Average	Below average	Poor
Between MMM DD – MMM DD, how did this business's operating revenues/sales/receipts change?	Revenues	Increased	-	No change	-	Decreased
Between MMM DD – MMM DD, how did this business's number of paid employees change?	Employees	Increased	-	No change	-	Decreased
Between MMM DD – MMM DD, how did the total number of hours worked by this business's paid employees change?	Hours	Increased	-	No change	-	Decreased
Between MMM DD – MMM DD, how did the time it takes for this business to receive deliveries from suppliers change?	Delivery time	Increased	-	No change	-	Decreased
Between MMM DD – MMM DD, how did demand for this business's goods or services change?	Demand	Increased	-	No change	-	Decreased
Between MMM DD – MMM DD, how did the prices this business charges for its own goods or services change?	Output prices	Increased	-	No change	-	Decreased
Between MMM DD – MMM DD, how did the prices this business pays for goods or services change?	Input prices	Increased	-	No change	-	Decreased
Six months from now, how do you think you will describe this business's performance?	Future performance	Excellent	Above average	Average	Below average	Poor
Six months from now, how do you think this business's number of paid employees will have changed?	Future employees	Increased	-	No change	-	Decreased
Six months from now, how do you think the total number of hours worked by this business's paid employees will have changed?	Future hours	Increased	-	No change	-	Decreased
Six months from now, how do you think the time it takes for this business to receive deliveries from suppliers will have changed?	Future delivery time	Increased	-	No change	-	Decreased
Six months from now, how do you think demand for this business's goods or services will have changed?	Future demand	Increased	-	No change	-	Decreased
Six months from now, how do you think the prices this business charges for its own goods or services will have changed?	Future output prices	Increased	-	No change	-	Decreased
Six months from now, how do you think the prices this business pays for goods or services will have changed?	Future input prices	Increased	-	No change	-	Decreased
What is the longest time period over which you believe you can predict this business's performance?	Forecast horizon	1 month or less	2-3 months	4-6 months	7-12 months	More than 12 months